genous vegetation of Australia, and eleven of the thirty-two genera described by Bentham and Hooker are in part, or wholly, Australian, with a total of thirty-seven species. Of these Araucaria and Agathis (Dammara) are the only genuine cone-bearing genera; the former being also represented by recent species in Brazil and Chili, and the latter is spread over the Malayan Archipelago and extends to New Zealand and some of the Pacific Islands.

Coming to the plan of the book and the treatment of the subject, it should be explained that the main object of the investigations was to ascertain, describe, and illustrate the "commercial possibilities" of the various species of the Australian Coniferæ. The genus Callitris (otherwise Frenela)—to which Mr. Baker applies the popular name Cypress generically, in spite of his title—as now generally circumscribed, is almost restricted to Australasia (Australia and Tasmania). Two species, however, occur in New Caledonia, a fact overlooked apparently by Mr. Baker. There are eighteen Australian species, and they are spread over the whole country. Its nearest allies are African, and they have sometimes been referred to the same genus; but Mr. Baker, following other authorities, retains the North African Tetraclinis, and the South African Widdringtonia, which he diagnoses anew. Callitris is the only genus of Coniferæ of general dispersion in Australia, and the vast areas covered by some of the species will come as a surprise to most botanists. Mr. Baker gives very full details of the distribution of the Australian Coniferæ, but more especially within the State of New South Wales. *Callitris glauca* is found in all the States, "but nearly always away from the coast." Ten pages are devoted to its distribution in New South Wales, where it is known to occur in eighty-seven counties, covering hundreds of thousands of acres. *C. glauca* is perhaps the most important of all the small trees of Australia, as its timber (as well as that of other species of Callitris) is impervious to the white ant.

This species is illustrated by about thirty figures, from the habit of growth of the individual to the anatomy of the various parts. Altogether the work contains 296 figures of anatomical structure and chemical secretions, all photographic reproductions, some in colour and mostly of excellent quality. In addition there are about seventy unnumbered plates or full-page illustrations, some of which are scenic, others individual trees, while others represent herbarium specimens of the natural size. Unfortunately an index to the figures and plates is wanting. There are also three maps, one of which illustrates the distribution of the Coniferæ of New South Wales so far as at present known. In the compilation of this map the authors had the assistance of about 130 persons, mostly schoolmasters and mistresses. Assuming that they afforded trustworthy information, it is evidence of an interest in natural history not easily paralleled. As already mentioned, the chemical composition of the various products, the results of very protracted investigations, is given in considerable detail. In addition there is much practical information. Comparing the number of species cited, it will be seen that an average of twelve pages is devoted to each; more or less, according to their importance. Much space is devoted to anatomy and chemistry, and more might have been profitably given to morphology and a discussion of the theoretical structure of the female cone and the male catkin of the earlier writers. The term gymnosperm is mentioned, but no definition follows, and for a description of the family the reader is referred to Bentham and Hooker's "Genera Plantarum," as Mr. Baker considers it "would be superfluous to repeat it," losing sight of the fact that this classical work is expensive and accessible to comparatively few persons, besides not being up-to-date in many details. W. B. H.

PRACTICAL INORGANIC CHEMISTRY.

A Manual of Practical Inorganic Chemistry, including Preparations and Qualitative and Quantitative Analysis, with the Rudiments of Gas Analysis, specially adapted to cover Preliminary and Intermediate University Courses and the First Three Stages of the Syllabus of the Board of Education. By Dr. A. M. Kellas. Pp. viii+347. (London: H. Frowde and Hodder and Stoughton, 1910.) Price 5*s.* net.

THIS volume belongs to the series of Oxford medical publications, in which an "Introduction to Practical Chemistry" was published by the same author in 1909. A comparison of the two volumes shows that nearly two hundred pages of the texts are identical, and there can be little doubt that the type set up for the earlier publication has been used in the production of the major portion of the present volume.

Amongst the new matter may be noted a section dealing with preparative work of a more advanced character. The preparations described include the chlorides and oxides of sulphur, phosphorus, and silicon, the chlorides of iron, aluminium, and tin, bleaching powder, potassium chlorate, chromate, bichromate and permanganate, sodium nitrite, calcium hypophosphite, and sodium thiosulphate. The list of metallic compounds, of which the mode of preparation is described, has, moreover, been extended so as to include practically all the inorganic compounds in the British Pharmacopœia. A summary of these compounds is given, in which the impurities to be looked for are in each case indicated. This extension is evidently designed for the special purposes of pharmaceutical students, and can scarcely be regarded as an enlargement in the scope of the work from a chemical or an educational point of view.

In the section dealing with the identification of acid radicles, the reactions of some thirty-three acids are given in the *Manual* as compared with sixteen in the *Introduction*. The short section devoted to quantitative analysis in the latter has been expanded from about twenty-five to seventy-five pages in the new volume, and in addition to several new gravimetric estimations, the commoner volumetric methods are described. This and the last section, in which the author gives an account of the apparatus and methods used in quantitative gas analysis, represent the greater part of what is not to be found in the previous volume.

The new matter is presented in a very lucid form, and from the instructions and detailed explanations, which are intended to lighten the work of the teacher, the average student should find little difficulty in working intelligently in the laboratory without much supervision.

In connection with the formulation of chemical changes, a brief reference is made to the theory of electrolytic dissociation, and the reader is informed that the reactions involved in analysis are, as a rule, ion reactions. If this is really the case, it is difficult to justify the author's use of ordinary chemical equations in preference to ionic equations, even if it be admitted, that, in some cases, the representation of oxidation and reduction changes is not quite so simple when the ions are taken into consideration.

In view of the undoubted merits which the book possesses, it is distinctly unfortunate that nearly two-thirds of the contents should be a mere copy of a previous and very recent publication. There is nothing in the titles of the two books to suggest such a large measure of identity in respect of text and diagrams to prospective purchasers, and it is to be regretted that the publishers should have seen fit to proceed to publication in this particular way. H. M. D.

MATHEMATICS AND OPHTHALMOLOGY.

The Prescribing of Spectacles. By A. S. Percival. Pp. vi+159. (Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd., 1910.) Price 5*s.* 6*d.* net.

DR. A. S. PERCIVAL is one of the most eminent of the comparatively few English ophthalmologists who have shown the requisite knowledge to treat mathematically in an exhaustive manner optical problems connected with the eye. The ordinary student of ophthalmology is content to accept on authority the results obtained by others, or at most to study such geometrical expositions as may be readily understood. Indeed, he is generally wholly incapable of comprehending an analytical proof, and nothing is so abhorrent to his mind as an algebraical formula. It is greatly to be deplored that more emphasis is not laid upon the acquirement of a good knowledge of physiological optics, a subject which necessarily forms the very foundation of ophthalmology. Moreover, by far the greater part of every ophthalmic surgeon's work consists in the correction of errors of refraction, of defects in muscle balance, and other problems of an essentially optical nature. Only those who have given assiduous attention to the mathematical conditions presented by these problems can appreciate the help which this arduously acquired knowledge gives them. It is a humiliating fact that many practising opticians are far better equipped in this respect than most ophthalmic surgeons, and if the latter seriously expect to hold their own against the encroachments of the former they must outrival them on their own ground.

Dr. Percival's little book will prove of valuable service in the task. All the common problems which daily confront the surgeon in ordering spectacles for errors of refraction and defects of muscle balance are discussed, and the underlying principles lucidly explained. In most cases mathematical proofs, culled from the author's work on optics and other original papers, are set forth. Dr. Percival's name is specially associated with the formulæ for periscopic glasses, and the inquiring student will here be enabled to find out how the formulæ were arrived at, and why such lenses are to be preferred. A few paragraphs, such as the pinhole test of ametropia, might have been omitted as of little practical value, and the student would do well to read Maddox's book on the "Ocular Muscles" in conjunction with the chapter devoted to the subject in this work. The author's advice is always founded on a secure scientific basis, and such paragraphs as the following show that he is not carried away by purely theoretical conceptions. In speaking of the association between accommodation and convergence he says:—

"Clearly, if the relation between the two functions is unfitted for present requirements, and if there is no sufficient faculty of adaptation that can be brought into play by training, we should make the glasses suit the patient, instead of vainly attempting to make the patient suit the glasses."

And again:—

"In conclusion, I would say that although few patients will require such a complete examination as is here suggested, yet it is well to investigate the relationship of these functions of convergence and accommodation whenever symptoms still persist after the correction of any refractive errors and hyperphoria that may exist."

We can cordially recommend the book, and we hope that it may stimulate many ophthalmic surgeons to acquire a more profound knowledge of this branch of their subject.

THE BEETLES OF INDIA.

The Fauna of British India, including Ceylon and Burma: Coleoptera Lamellicornia (Cetoniinae and Dynastinae). By G. J. Arrow. Pp. xiv+322+ii coloured plates, and 76 illustrations in the text. (London: Taylor and Francis, 1910.)

THE beetles of India are an enormous subject, and the volume before us only deals with two subfamilies of the great group Lamellicornia, the first of which, though comprising the well-known and extremely interesting rose-chafers, is only represented by a few species in Britain, while the Dynastinæ, though a few species are found in southern Europe, is not represented in the British fauna at all. Two hundred and eighty-seven species of these two subfamilies are here described as belonging to the Indian fauna, but the editor's estimate of these being "perhaps less than one-sixth of the great 'series' of Lamellicornia," is perhaps somewhat too high, when we consider that the Lamellicornia include the whole of the chafers, the sacred beetles, and the stag-beetles.

Mr. Arrow has been fortunate in receiving the cooperation of the curators of most of the principal entomological collections in Europe and India, and of many enthusiastic and experienced collectors in India and Ceylon, and his work may therefore be taken as a trustworthy epitome of what is at present